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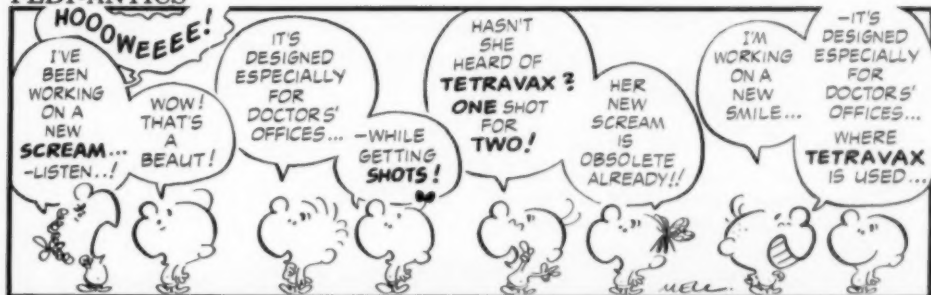


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November 1960

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*Hilleman, M. R., Charney, J., Tytell, A. A., Wehl, C., Cornfeld, D., Ichter, J. T., Riley, H. D., Jr. and Huang, N.: Investigation into the development and clinical testing of a poliomyelitis vaccine containing standardized amounts of purified poliomyelitis virus antigens, 1960 Symposium on Polio Vaccines, Newark, New Jersey, April 20, 1960.

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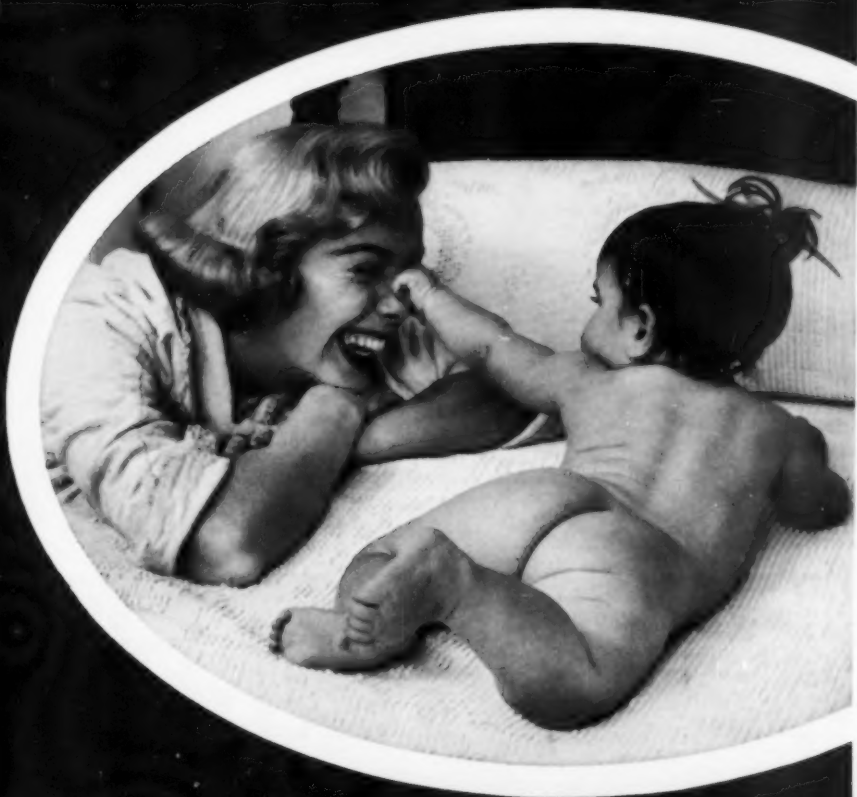
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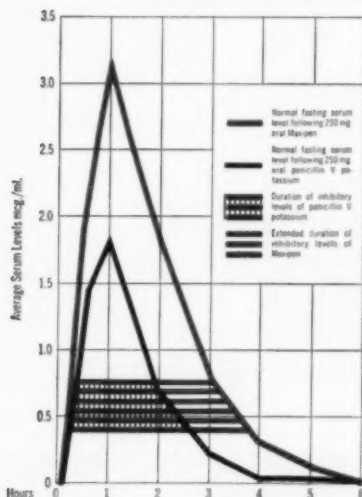
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1. Gourevitch, A., et al., *Antibiotics Ann.* 1959/60, pp. 111-116.
2. Pindell, M. H., et al., *Ibid.*, pp. 119-120.
3. Morigi, E. M. E., et al., *Ibid.*, pp. 127-132.
4. Cronk, G. A., et al., *Ibid.*, pp. 133-145.
5. Osment, Lamar S.: Pilot Study of Alpha-Phenoxymethyl Penicillin in Sepsis Infections, *Clin. Med.* 7:523 (Mar.) 1960.
6. Garrod, L. P.: Relative Antibacterial Activity of Three Penicillins, *Brit. M. J.* (Feb. 20) 1960, p. 527.



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References: 1. Soss, T. L., in Collect. Letters, Internat. Cor. Soc., Ophthalmologists & Otolaryngologists 3:177, Dec. 15, 1958. 2. Budetti, J. A., and Seydell, E. M.: *J. Kansas M. Soc.* 57:59, Feb., 1956.

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A Survey of Three Hundred Obese Girls

EDWARD T. WILKES, M.D.†

New York

Obesity in adults is conceded to be one of our great medical problems and its dangers have been intensively studied. The part played by persistent juvenile obesity has not been so thoroughly studied, but various investigators have reported that many obese adults were stout from childhood, especially women. There is some divergence of opinion as to the exact proportion of obese adults who were obese since childhood, but there seems to be no doubt that in a substantial number of overweight adults, the difficulty in controlling their appetite stems from childhood. Mullins¹ found thirty percent of 101 obese adult patients at the St. James Hospital in London had been obese since childhood. Gurney² studied sixty-three fat women and found eight had been obese all their lives, and four more since puberty. Abraham and Nord-sieck³ rechecked fifty obese girls from between ten and fourteen years of age twenty years later and found forty had remained obese as against nine of his control group of fifty average weight girls.

Any information obtained from a large series of obese girls should be significant. We therefore welcomed an opportunity to co-operate in preparing a questionnaire to be sent to 15,000 members of a "Chubby Club,"* stout children between ten and fourteen years old. They were all so obese that they purchased their clothing in a dress shop specializing in garments for obese girls. The club was formed to promote the mutual interests of fat girls, and has its own newspaper. Only three hundred girls returned the completed questionnaire. This is only a 2% return contrasted with 5% of members of a Tall Girls Club who answered a questionnaire designed for them. Whether this was due to the greater laziness of the chubby girls or the greater length of the questionnaire we do not know. But this small percentage of return does caution us to be careful not to transfer any conclusions to the entire 15,000 girls queried. Nevertheless, the study developed several interesting findings.

*The Chubby Club was sponsored by Lane Bryant Inc. Paula Miller of their staff was most helpful in the preparation of the questionnaire and the processing of the results.

† Associate Clinical Professor Pediatrics, New York University Medical School.

The answers came from seventeen large cities and towns of the United States, including Detroit, New York, Chicago, Dallas, Milwaukee, South Bend, Miami, Springfield, San Francisco and Des Moines. As may be noted from Chart 1, a cross section of national descents is represented. The occupation of the fathers varied, a little more than half engaged in skilled or unskilled labor. Forty percent of the mothers worked, which is a higher figure than the U. S. Department of Labor's 32 percent for mothers with school children between six and eighteen years of age. (1958).

The girls in this study averaged $38\frac{1}{2}$ pounds more than the standard average for their age.* The heaviest was 223 pounds, and the lightest 90 pounds. These chubby preadolescents were not only heavier but also taller than the average girls of their age. The ten and eleven year olds were fully four inches taller, and the twelve and thirteens one inch taller than the standard average for their age. This is what one would expect because obese girls have advanced maturation and earlier menarche. With earlier epiphyseal closure, the pace of height slackens. Johnson, Berke et al⁴ showed this by comparing 28 obese girls with an equal number of non-obese. They found that the fat girls had earlier maturation and menarche. Geschneider⁵ found likewise that 27 heavy girls matured faster than medium weight girls.

ROLE OF HEREDITY

We tried to get an idea of the possible role of heredity in this group of obese girls by checking the build of their parents. Many did not know the weight, but were able to get the size of the mother's dress and the father's suit. Of the mothers, 120 (40%) wore a size 38 or larger, designed only for the stout woman. Of the fathers, 42 (12%) had suit sizes of 46 or larger, which indicate great bulk.

In a study of 1000 overweight Viennese children, Bauer⁶ reported 73% of the mothers were overweight. Rony⁷ gives 69% as the obesity figure for one or both parents of obese children, and Ellis⁸ reported 50 very obese children of whom 25% had a fat mother and 12% a fat father. Hill⁹ makes the point that farmers for thousands of years have accepted the genetic factor as potent in the tendency to heaviness in cattle and pigs, selecting certain strains with such tendency when they want to breed fat into an animal. Nevertheless, it is difficult to separate the part played by heredity

*The Growth Spectrum. George Naimark. J. Pediatr. 50, May, 57, 586.

from the food habits of the family. Mullins¹ studied 101 consecutive adults who came to the out patient clinic and found 26% of the men and 44% of the women were 20% above the standard weight. Of the 32 who had been obese since childhood, 27 were women and 5 men, indicating a greater tendency for females to remain stout.

POSITION IN FAMILY

One might think the middle child in a family is likely to be subject to special psychological strains which might lead to overeating as a substitute for the increased need for affection. In our study this was not true. Only 17% were middle children, and 12% were only children. The largest part were the oldest or youngest of the family. 13% had only one parent. In Iversen's¹² group of 40 fat children, 12 were only children, 12 were the oldest and 9 the youngest in the family.

AGE OF ONSET OF OBESITY

When is obesity most likely to develop? Johnson⁴ states that in girls, ten to fourteen years is the most likely period. Lowery¹¹ says that the pattern may start in infancy or at three or four years of age when the child loses fat and the worried mother stuffs him. Hill⁹ equates obesity with the various crises of childhood: the three-year level when the child reaches out to the family for satisfaction, six years when school begins, eight to fourteen when prepubertal and early adolescence starts, and again at fifteen to seventeen when the drive for social adjustment and acceptance begins.

FOOD HABITS

There is no question about food habits being an important factor in the obesity of the three hundred girls studied. Three-fourths were hungry between meals, and sixty-five per cent ate candies, cake, ice cream or chocolate milk at such times. While watching television, seventy-seven percent had snacks. As their favorite foods, $\frac{1}{4}$ chose spaghetti, potatoes or dessert; other favorite foods were pizza, ice cream, baked beans, and banana as a fruit 37% chose ham, porkchops or frankfurters.

Most of these children had some knowledge of nutrition, 75 per cent having had a nutrition course at school and 50 per cent of the entire group tried to apply what they learned to their own dieting. However, although 81 per cent tried to reduce by dieting, only 16 per cent were successful. Of this small number one out of four

CHART I

Vital Statistics

<u>Age</u>		<u>Mean Weight</u>
10 to 11 years	Chubby girl 5'	115 lbs.
12—13 years	Average girl 4' 8"	76 lbs.
	Chubby girl 5' 2"	135 lbs.
	Average girl 5' 1"	96½ lbs.

Average weights and heights from Growth Spectrum chart, White Lab., Kenilworth, N. J.

Age in Relation to Siblings

Oldest child	39%
Youngest	32
Middle	17
Only child	12
13% have only one parent	

School Status

Advanced	12%
Average	73%
Backward	15%

National Descent

Irish	17%
German	15
Polish-Russian	15
English	12
French	11
Italian	9
Scotch	6
Scandinavian	4
Other	11

Father's Occupation

Skilled Labor	36%
Executives	18
Unskilled Labor	15
White Collar	13
Professional	10
Civil Service	8

regained the lost weight later. The large number of working mothers unable to supervise their diets accounts for some of the failures.

Some of the remarks the children made about their dieting are interesting: "The less I ate, the heavier I got." "I got hungry and ate." "It made me tired and nervous." "I became weak." "I lost but then gained more."

PERSONALITY TRAITS

The leisure hour occupations of these girls give another clue to their obesity. Ninety-percent watch television for more than two hours daily, 25 per cent for more than three hours and one girl of 170 pounds for eight hours. Although they spent an average of five to seven hours weekly in sports, mostly swimming, dancing, and cycling, this is less time than their siblings spent in sport. This lack of exercise in the obese includes a real lack of enjoyment in using their bodies or a mistrust of their ability to learn an athletic skill. It is part of their disturbed total approach to life. When sports competition is arranged between stout girls, the chance of

CHART II

Leisure Time Activity

What do you do in your spare time?

90% spend at least two hours a day watching TV. 25% average at least three hours daily, some with as much as seven or eight hours. 9% watch TV alone, 19% with friends, and 56% with family.

78% are regular radio listeners. 12% to music, and 10% specifically to rock and roll.

20% read.

13% collect stamps, draw, crafts or sew.

10% study.

9% cook.

Sports.

Five to seven hours weekly in active sports. Only 2% in no sport at all. 22% swimming, 16% dancing, 12% roller skating, 9% ice skating, 7% basketball, 6% bowling, and 8% riding, tennis, baseball, volleyball and badminton. Preference in sports similar to the slim, but time spent in participation less; for example, one 13 yr. old spends 20% less time in dancing than her slim sister.

*Personality Glimpse**Social Activities.*

60% have not joined any group or club in school or outside.

Do you have dates with girls?

Occasionally—47%. Often—22%. Weekly—18%. None—13%. Only a few dated boys.

How many phone calls do you make weekly?

None—25%, 2—29%, 6—22%, 10—17%, over 10—7%.

Are you dissatisfied with your looks generally?

Yes—55%, No—41%, Sometimes—4%.

Are you dissatisfied with—

Weight—88%, Legs—36%, Complexion—26%, Bust—18%, Hair—18%, Height—7%.

If you could change one thing about yourself, what would it be?

58% wrote weight, 19% wrote weight and in addition specified: hips, figure, shape, belly, stomach or waist.

23% wrote bust, legs, complexion or teeth.

Are you teased about your chubbiness by—

Friends—yes—60%, Family—yes 53%. Others—yes 42%.
no—40% no—47% no—58%.

What do you worry about most?

40% worry about weight (poundage, diet, name calling, figure).

60% worry about school, family and popularity, in that order.

success is greater and they become more interested in sports. (Speckos and Spargo¹²).

Bruch^{13a} studied 160 obese children and found inactivity characteristic. There were 68 per cent who were abnormally inactive; only 22 per cent had normal activity. In her analysis, she concluded that

statistically, inactivity was more important than overeating as a cause of obesity in these children. In fact, the caloric intake of the obese children was less than the non obese, with the greater energy balance being supplied by inactivity. Mullins found that the weight reduction in his obese children was associated with increased activity. In some cases, the weight loss occurred first, and the activity followed. In others, the increase in activity seemed to occur spontaneously.

In a further attempt to study their personalities, we queried the girls about their dates, social activities, and worries. More than half, 55 per cent, were dissatisfied with their looks, 88 per cent with their weight, 36 per cent with their legs, 18 per cent with their busts, and 25 per cent with their complexion.

Most of these obese girls, sixty percent, have not joined any group or club in school or outside of it. Fifty-eight per cent, if given the power to change one thing about themselves, would change their weight. Over half the group were teased about their chubbiness, 60 per cent by friends and 53 per cent by their family. Forty per cent worry most about their weight; the rest about school, family, and popularity, in this order.

The answers to, "What pleases you about being chubby?" showed that nothing about chubbiness really pleases the early adolescent. The great majority answered in one word, "Nothing." A few verbalized further to show anger, despair, frustration, hurt, or humorized on their size. The few favorable comments received were pathetically defensive.

WHAT FUTURE?

What is to become of these 300 fat children? Some will overcome their obesity during their high school years. We have all seen chubby youngsters of twelve outgrow their obesity during or after adolescence, especially those who were not markedly obese. According to Johnson⁴ only one third of the overweight girls and one half of the boys will continue to be obese throughout their high school years.

However, fully four-fifths of these girls will be overweight as adults if they follow the trend of the overweight ten to fourteen year old girls studied twenty years later by Abraham and Nord-sieck.³ They reported on a two decade follow-up of 200 residents of Hagerstown, Maryland. Fifty girls, 10 to 14 years old, at least

CHART III

What I Like About Being Chubby—

- "I wouldn't want to be skinny."
- "My older cousin thinks I'm cute."
- "I'm not a skinny-ninny." Some used term skinny bean pole.
- "I'm able to hit my brother without getting hurt."
- "I'm thankful my legs are chubby and not sticks like Dinah Shore's."
- "I have very good health."
- "I can have fun making jokes about myself."
- "I can't think of anything I like about being fat".

What Displeases You About Being Chubby?

- "Boys don't like you as well".
- "It keeps you from doing things".
- "The boys don't like me. They call me fat".
- "When your friends start calling you names. I really hate that".
- "I'm bigger than boys, and a fat boy calls me fat".
- "I can't run fast . . . and can't lose weight".
- "I'm larger than most girls . . ."
- "I feel I am not very popular and nobody cares for me".

20 per cent overweight, who were first measured and weighed in 1937-39 were rechecked twenty years later with a portable scale and measurer. Forty were overweight as adults, as against only nine of fifty average weight girls who served as controls. The researchers conclude that the difficulty overweight adults have in controlling their diets may be rooted in childhood. We must develop more effective methods for treating juvenile obesity.

TREATMENT

The best approach in treatment and correction of food habits would seem to be not only instruction in diet, but the total approach, as determined by an individual analysis of the factors responsible in the particular child. Thus, exercise might be emphasized in some, psychotherapy in others, and of course, diet in all. For some few persons chubbiness throughout life may be necessary to their best functioning, and they are excellently adjusted to their obesity. It may even harm them to lose much weight.

For lasting effect, one must improve the total adjustment of the obese child to life. Verbal admonitions and lectures on a grim prognosis are useless. New outlets must be found for their energies and creative potential, and their social adjustment must be improved. "What must be developed" says Bruch¹³ "is a way of life with food in a supportive rather than a major role."

Anorexic drugs have not proved the answer although they may be useful in starting some children on the road to losing weight.¹⁴ The thyroid, which used to be blamed for much obesity,

is only rarely responsible in children. Wilkins¹⁵ found only two obese children in over two hundred hypothyroid children at the Harriet Lane Home Endocrine clinic, and Gordon¹⁶ reported only four among four hundred fat children at the New York Hospital clinic. These four lost weight with only small doses of thyroid, and gained weight when the thyroid was discontinued.

It is easy to see why the best results occur in the more intelligent patients. In the Mullins' group of obese children he succeeded in getting moderately good results only in the seven who were intelligent. In our series of 300 girls, 73% were average for their age, 15 per cent were below the average grade for their age, most of these were within one year of their proper class. It is fair to assume that it will be most difficult to reduce the obesity of these children, and the 12 per cent in advanced classes have the best chance for success. Oestergaard¹⁷ found normal intelligence among obese children.

In Mullins' group, psychological factors seemed to play an important role in 1/3 of the obese patients as against 18 per cent of the normal weight group. Bruch,^{13b} with a hospital practice, psychiatrically oriented, found this the most important factor in her cases. Juel Nielson¹⁸ (1953) found it important in nine of 60 obese school children, and Iversen (1953)¹⁹ in 16 out of 40.

Franklin and Ryerson¹⁹ found that when a child hasn't too many pounds to lose, the chances of success with supervision of the diet was greater than when the excess weight was large. Most good results came within the ten per cent overweight group. In those over 20 per cent of the average weight only one out of five succeeded in reducing, but 67 per cent lost weight in those less than 20 per cent overweight.

Bruch and Stuart (1955)^{13c} found the juvenile obese hard to treat. No child was reduced to the normal weight standard for her build, poor results (less than 30 per cent loss of the excess poundage) were obtained in 62 per cent, and moderate success (more than 30 per cent loss of the excess weight, but not yet within 20 per cent normal weight) in only 25 per cent of the children.

Bruch^{13d} studied one group of twenty obese children for twenty-five years and found that nearly all had followed a zigzag weight curve through the years, losing weight when under no strains, and gaining when subjected to stress.

The psychological reactions were of two types: (1) the normal reaction to tension by increasing food intake; (2) a rapid increase of obesity following a specific stress, such as an operation or death in the family. Not all people react to stress by eating. Johnson quotes the interesting case of a thin husband and plump wife with the same stress. The husband lost 13 pounds and the wife gained 26 pounds before the worry ended. Mullins¹. It is of course impossible to obtain adequate psychological care for every obese child or adult.

A new hope and approach is that of Penelope Speckos, John Spargo¹² and some members of the Boston Adolescent Clinic who started a camp in the summer of 1959 for 38 obese girls between 12 and 20 years of age; most were 14 to 16 years of age. Because all were stout, the girls had a new motivation in sports competition as they felt they had a better chance of success. Their personality was worked upon by the psychiatric social worker, and there was improvement in their desire to make friends and maintain them. The average diet was 1200 calories daily. All the campers lost weight during the eight weeks of summer, the average amount being 22 pounds, varying between 8 and 36 pounds for the individual girl. Follow-up studies are being conducted, and after six months, most of the girls have held their loss of weight and maintained their interests in new friends and in sports.

CONCLUSIONS

1. The average obese girl of ten to fourteen in our series of 300, is taller than her average weight contemporary; the ten to eleven group by four inches, the twelve and thirteen year group by one inch.
2. Obesity was not more frequent in the middle child of the family. Only 17 per cent of our study were middle children. Most obese girls are the youngest or oldest.
3. Dieting as practiced by 243 ten to fourteen year old obese girls in this study was unsuccessful in all but sixteen per cent, and of this small number, one fourth regained their lost weight later.
4. Inactivity and food habits played large roles in the obesity of this group. Too little time spent on exercise, too much on television, reading and studying.
5. Social activity was low, sixty per cent of the girls did not belong to any group or club within or outside of school.

6. Obesity is a great handicap to the ten to fourteen year old girl conscious of excessive weight all the time. In 58 per cent of the girls studied, the one thing they would want to change about themselves if they had the power to do so, would be their weight. They are notably displeased about being fat. Over half are teased about their obesity. The great majority find nothing to be pleased about being fat and the few who liked it were pathetically defensive. A few verbalized further to show anger, despair, hurt or humorized on their size.

SUMMARY

This study is based on answers to a questionnaire sent to 300 obese girls between ten and fourteen years of age. They belonged to a "Chubby Club" sponsored by a national firm that specializes in clothes for the fat. The average girl in this group was 38½ pounds above the average. They were also taller, the ten to eleven year group by four inches, the older group by one inch. Forty per cent of the mothers and 12 per cent of the fathers of this group were obese. The food and leisure habits and inactivity played an important role in their obesity. They were mostly older or younger children of the family, not middle ones. Their personalities were studied, and in general revealed that they were greatly concerned about their weight; they were not pleased that they were fat.

Sixty per cent of the girls did not belong to any club or group in school or outside.

Dieting was unsuccessful except for about ⅛ of those who tried it. Their future does not appear too optimistic unless we can find a more successful method of treating obesity, and start changing the whole personality of these girls early in childhood. We also must train them in dietary habits and encourage them in physical activity. One excellent approach is the camp for obese girls. Together with girls who share their problems, they begin a way of life which corrects their obesity.

BIBLIOGRAPHY

1. Mullins, A. G. Prognosis in Juvenile Obesity. *Arch. Dis. Chil.* 33:307-14, 1958.
2. Gurney, R. Hereditary Factors in Obesity. *Arch. Int. Med.* 57:577, 1936.
3. Sidney Abraham and Marie Nordsieck. *Pub. Health Reports*, Mar. 1960, 75; No. 3, 263-73. Relation Excess Weight in Children and Adults.
4. Johnson, Burke and Mayer. The Prevalence of Obesity in School Children. *Am. J. Clin. Nutr.* 4:231, 1956.
5. Gschneider, Roderick C. Nutriture School Girls of Different Physiques. *J. Amer. Diet. Ass.* 36 No. 1, 22-6, Jan. 60.
6. Bauer, J. *Constitution and Disease*. N. Y. Grune and Stratton, 1945.
7. Rony, H. *Obesity and Leanness*, Phila. Lea and Fabiger, 1940.

8. Ellis, R. and Tallerman, K. Obesity in Childhood, a study of 50 cases. *Lancet* 2,615-30, 1934.
9. Hill, L. F. Obesity in Pediatrics. *Ped.* 20:540-57.
10. Iversen, Torben. Psychogenic Obesity in Children. *Acta Paediat* 42:8, 1953.
11. Lowery, G. H. Obesity in the Adolescent. *Am. J. Pub. Health* 48 No. 10, 1364 '58.
12. Speckos P. and Spargo J. Program and results of a camp for obese adolescent girls. *P. G. Med.* Apr. 1960.
13. Bruch, Hilde. Psychological Aspects of Adolescence. *Am. J. Pub. Health*, 48:1349, Oct. 1948.
 - a—Importance of Overweight N. Y. Norton, 1957.
 - b—Obesity in Children. Energy expenditure of obese children. *Am. J. D. Child.* 60:1082, 1940.
 - c—Role of emotion in hunger and appetite. *Ann. N. Y. Ac. Sci.* 63:68, 1955.
 - d—Fat Children Grown Up. Johns Hopkins Med. and Surg. Assoc. Baltimore, Md. Feb. 1955 quoted in Importance of Overweight, N. Y. Norton, 1958.
14. Modell, Walter. Status and Prospects of drugs for overeating. *J.A.M.A.* 173, No. 10, 1191, July 9, 1960.
15. Wilkins, L. Fat Metabolism Report of 11th. M and R Pediatrics Conference, 1954. Columbus.
16. Gordon, Harry. Report 11th. Mand R Conference. Columbus, 1954.
17. Oestergaard, L. Psychogenic Obesity in Children. *Acta Paediat* 43, 507, 1954.
18. Nielson, Juel. Psychogenic Obesity in Children. *Acta Paediat* 42, 130, 1953.
19. Franklin, R. and Ryerson, E. H. An Evaluation of effectiveness of diet instruction for the obese. *Proc. Mayo Clin*, 35 No. 6, 123.

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Gangrene of an Extremity in a Newborn Infant

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Gangrene of an extremity in a newborn infant is a rare occurrence. Many experienced pediatricians and obstetricians have never personally observed this condition.

Askue and Wong¹ in 1952, reviewed the literature and, including their own two cases, were able to compile 52 cases of gangrene in the newborn period. Since then, a review of the English language literature reveals four more cases of gangrene in newborns.^{2,3,4}

This paper presents a case of gangrene of the right upper extremity of a newborn. The first signs were evident at birth.

CASE REPORT

Baby J. R. was a full-term-boy, born spontaneously to a 30 year old Gr. II, P. I, Ab O at 6:02 P.M. of October 25, 1959. The pregnancy and labor were uncomplicated. At delivery the infant was cyanotic and had depressed respirations. The infant responded well to resuscitation with suction and oxygen. When admitted to the newborn nursery at one hour of age, the infant's respirations were normal. The color was good except for peri-oral cyanosis and cyanosis of the right forearm and hand. The rest of the physical examination was not remarkable. The infant was placed in an isolette for heat and oxygen.

At three hours of age a blistering of the skin of the dorsum of the right hand was noted. By the following morning (Oct. 26, 1959) there was an ulcerative sloughing of the skin of this region. The hand remained cold and cyanotic, and pulsations of the right radial, brachial and axillary arteries were not palpable. During this period of time the arm was kept elevated and vaseline gauze dressings were applied.

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By the fourth day of life (Oct. 29, 1959) there was a definite line of demarcation between the diseased and healthy tissue. The hand and nailbeds were black, the lower two-thirds of the forearm was purplish. The upper one-third of the forearm and the elbow area were edematous. (Fig. 1 & 2)



FIG. 1. Right hand and forearm showing necrotic areas and line of demarcation.



FIG. 2. Right hand and forearm—illustrating gangrenous areas and edematous areas above the line of demarcation.

An x-ray of the right arm revealed only soft tissue swelling of the forearm and narrowing of the soft tissues at the tips of the fingers.

Other laboratory data at that time revealed:

Hb—19.5 Gms., RBC—5,780,000, WBC—9,150. Differential: Seg—32, Lymph—58, Mono—4, Eosin—6, Platelets—222,000.

Urinalysis was negative for sugar, acetone and albumin.

A surgical consultation was requested at this point and an immediate amputation of the right arm was advised. On the evening of October 29, 1959 a "Guillotine"-type amputation was performed below the right elbow.

The post-operative course was excellent and upon discharge on December 20, 1959 the open wound had healed completely by granulation. By the date of discharge the infant had increased from a birth weight of 6 lbs. 11 oz. to 9 lbs. 13 oz.

The pathological report of the amputated portion of the right arm was as follows: *Gross*: "The specimen consists of right hand and forearm. The skin is soft, elastic and shows a diffuse pinkish-red discoloration, except at the margin of the resection where there is a 2 cm. rim of skin which is white, viable and demarcated from the diseased skin by a reddish line. Section everywhere shows that the subcutaneous tissue is suffused with blood. The musculature is delicate and has the usual brownish-red coloration. The ulnar and radial arteries follow a normal course." *Microscopic*: "Section through the skin shows necrosis involving the epidermis, dermis, subcutaneous fat and skeletal muscle. Many small arterial branches in the subcutaneous tissue are also necrotic, edematous and contain fibrin thrombi. The ulnar artery shows no significant changes. The proximal end of the radial artery is thrombosed. In its adventitia there is infiltration by lymphocytes and neutrophils. The infiltration extends to the surrounding fat and also to the two veins accompanying the radial artery."

DISCUSSION

The etiology of gangrene in the newborn is still not completely understood. *Gross*⁶, in his article on arterial embolism and thrombosis in infancy, referred to the following etiological factors:

I. *Sepsis*: Overwhelming infection in infants gives rise to multiple areas of cutaneous and deep tissue necrosis. This is usually evident as small areas of necrosis, especially on the hands, feet, scalp and around the breast. However, septic conditions rarely cause occlusion of a large vessel which would lead to gangrene of an entire extremity.

II. *Congenital Heart Disease*: Of particular importance are the following conditions which may give rise to embolic phenomena.

- a) Sterile emboli which arise from thrombi of stenotic or anomalous valves
- b) Emboli originating from a thrombus in the wall of a fibrillating heart chamber

III. *Birth Trauma*

- a) Constriction of an extremity by an encircling umbilical cord.
- b) Prolapse of an arm alongside the presenting head in the birth canal.

- c) Pressure on a part during delivery. Especially implicated here are "dry" labors⁶.

IV. *Emboli set into motion by neonatal circulatory adjustments:*

Two very important situations are believed to be implicated here.

- a) Emboli arising from a closing ductus arteriosus. Anatomically speaking, these emboli could be expected to cause gangrene of the left upper and both lower extremities. Since the innominate artery arises from the aorta proximal to the ductus arteriosus, gangrene of the right upper extremity would not be expected.
- b) Thrombosis of the umbilical arteries extending upwards to the hypogastric and common iliac arteries and then ascending to the abdominal aorta. This would then compromise the circulation of the lower extremities.

V. *Changes in coagulation due to polycythemia.*

Earlier authors^{7,8,9,10,11} mentioned the possibility of Raynaud's disease, syphilis and diabetes mellitus as etiological agents in the causation of newborn gangrene. However, the more recent authors^{1,5,11,12} tend to reject these possible etiological mechanisms.

Returning to the case presented in this paper, an attempt to correlate one of the above listed etiological factors with the probable agent responsible for the gangrene in this case, appears difficult. There were never any signs of an overwhelming infection or congenital heart disease. A review of the mother's labor record does not give any indication that the labor was difficult. The total length of the labor was thirteen hours and there never were any particular complications during this time. The fact that the gangrenous member was the right upper extremity mitigates the possibility of the ductus arteriosus or the umbilical arteries being involved in the thrombus formation.

A possible involvement of an abnormal coagulation mechanism would have to be considered here. The blood count taken on the fourth day of life revealed a hemoglobin concentration of 19.5 gm. % and a red blood cell count of 5,780,000. Further hematological studies would certainly have been appropriate at that time. The continued well-being of the infant following the amputation would seem to indicate that he is not suffering from any major disorders at this time.

Although all the etiological mechanisms of gangrene in the newborn are not yet explainable, further work in this field is definitely indicated. While the condition may be relatively rare, the affected individual is faced with the possible loss of life or limb, neither of which is a pleasant prospect.

SUMMARY

A case of a newborn infant who developed gangrene of the right hand and forearm has been presented. The initial symptoms were noted at birth.

The various etiological factors which appear to be involved in the causation of gangrene of the newborn have been presented.

REFERENCES

1. Askue, W. E. and Wong, R.: Gangrene of the Extremities in the Newborn Infant, *J. Ped.* 40:588, 1952.
2. Stadler, H. E.: Neonatal Symmetrical Pedal Gangrene with Complete Remission, *J. Ped.* 43:447, 1953.
3. Abad, M. B. and Adea, R.: Bilateral Symmetrical Gangrene of the Foot in a Newborn Infant, *M.D.* 6:453, 1956.
4. Brock, B. H.: Neonatal Ischaemic Gangrene of the Lower Leg, *Proc. Roy. Soc. Med.* 52:580, 1959.
5. Gross, R. E.: Arterial Embolism and Thrombosis in Infancy, *Am. J. Dis. Child.* 70:61, 1945.
6. Steiner, M.: Gangrene of an Extremity in a Newborn Child, *Am. J. Obst. and Gynec.* 49:686, 1945.
7. Löwy, Luise: Gangrene in a Newborn, *Mitteilungen der Gesellschaft für innere Medizin und Kinderheilkunde in Wien* 21:152, 1922.
8. Kosmack, G. W.: Gangrene of the Extremities in the New-Born, *Bulletin of the Lying-in Hospital*, 4:124, 1928.
9. Alguirre, R. C., Calcarama, J. R. and Funes, A. L.: Symmetrical Gangrene of the Extremities in a Newborn Infant, *Arch. Argent. Pediat.* 12:125, 1929.
10. Dohan, F. C.: Gangrene of an Extremity in a Newborn Infant, *J. Ped.* 5:756, 1934.
11. Perlmutter, H. D. and Wagner, D. H.: Arterial Thrombosis in the Newborn Infant, *J. Ped.* 37:259, 1950.
12. Feldman, S., Goodgold, J., Levy, H. and Zalesnak, B. D.: Acute Thrombosis of the Femoral Artery in an Infant, *J. Ped.* 38:498, 1951.

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Alimentary Salt Poisoning

Paralytic ileus, respiratory paralysis, excessive acidosis and anuria—cured after prolonged artificial ventilation.

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The clinical picture of salt poisoning in infants is recognized by hypertonic dehydration, which results when an infant, during an illness, loses fluid without corresponding loss of electrolyte, especially by evaporation from the skin and mucous membranes and by diuresis. The picture is also seen when dehydration is treated by oral or parenteral administration of fluids with too high a content of electrolytes (see, for example, Finberg et al., 1955⁴, Weil & Wallace, 1956¹³). Salt poisoning develops in shipwrecked persons who for want of other fluid drink sea water for their thirst. The sea water is so hypertonic that the human kidney cannot excrete an equally concentrated urine. The serious nature of the poisoning appears for example from the report of McCance et al. (1956)⁸, who found a total mortality of 40 per cent among shipwrecked persons who had drunk sea water, against a mortality of only 4 per cent among those where this was not the case.

There are many reports of alimentary salt poisoning in veterinary medicine, with high mortality (Heinz & Haas, 1923⁶, Boyer & Drown, 1956¹).

Kvalvik (1957)⁷ reports a case of alimentary poisoning with domestic salt in a five-month-old infant who was fed a five per cent salt-milk mixture for five days. At first, the infant refused to eat, but then drank such large amounts of salt-free fluid to satisfy its thirst that it developed general convulsions with unconsciousness and signs of pulmonary and cerebral edema, but recovered following proper diet.

To judge from the literature, however, errors in preparing infant food would appear to be a surprisingly infrequent cause of salt poisoning, in spite of the considerable opportunities which must avail themselves in an ordinary household.

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As the clinical picture may be extremely dramatic and variegated, the diagnosis difficult, and the problems of treatment many, the following case is considered to be of interest.

CASE REPORT

Previous history: The patient was a three month old girl, born prematurely, birth weight 2300 gm, both parents were healthy. There was no family history of hereditary disease, especially of the urinary system. The patient was bottle-fed, thriving, and had always been in good health. Premorbid length prior to illness was 58 cm (-4 cm), weight approximately 4200 g (-500 g).

Case history and status on admission: The illness was of acute onset, as she suddenly refused food. This refusal to eat was repeated throughout the next 12 hours; at the same time most of the milk mixture was vomited. She retained in all an estimated 50-75 g, and then completely refused food. The symptoms commenced following ingestion of a freshly prepared milk mixture. The bottles offered subsequently were prepared at the same time. No effort was made to give any other fluid. Thereafter, urine volume was scanty, there was a single watery stool, temperature rose to 39.8° C, and she became excitable, with violent spasmodic twitching movements, and occasional general convulsions, forced hyperpneic respiration and almost continued nystagmus. Her sensorium clouded simultaneously, she became difficult to contact and gradually became unconscious. She was admitted with this clinical picture 38 hours after the first symptoms. At this stage she was exhausted and weak with slightly cyanotic and pallid skin color and distended meteoric abdomen. Respiration was 80 per minute, pulse rapid and soft, 160 per minute. No heart or lung changes were heard. The patient weighed 3900 gm, having lost 300-400 gm during her period of illness, but gave the impression of only moderate dehydration. The spinal fluid contained 127/3 white cells, and there was no growth. In the arterial blood, serum sodium was 194 mEq./L., chloride 174 mEq./L., bicarbonate 10 mEq./L., pH 6.94 and pCO₂ 62 mm Hg. Blood urea was 187 mg per 100 ml. The urine contained albumin, but otherwise no pathological constituents. The pH of the urine was 5.2, Hgb. 59 per cent (100 per cent=14.8 g per 100 ml). Leucocytes: 14280—differential count: 5 nucleated RBC per 100 cells, otherwise nothing abnormal. Bone marrow showed haemolytic features, extramedullary erythropoiesis and severe reactive changes.

Course: Fig. 1 shows this graphically for the first eight days.

Fig. 1 shows changes in the blood chemistry and weight, as well as important signs. In particular, the course of the respiration, gastro-intestinal signs and diuresis are indicated, and points are marked at which treatment was given. The meaning of the symbols is indicated in the drawing.

The motor hyperactivity, nystagmus and jerky arm movements continued unchanged for the first 36 hours, occasionally increasing to attacks of general twitching and general convulsions, at times of a tetanic nature (serum calcium was initially and on the 3rd hospital day 6 mg. per 100 ml, and hyperphosphatemia was present). The tetanic convulsions were partly controlled by calcium gluconate i. v. Forced respiration continued likewise, but as the rising $p\text{CO}_2$ shows, was insufficient in spite of oxygen treatment. The patient's meteorism gradually developed into actual paralytic ileus, confirmed by radiogram of the abdomen. No spontaneous micturition developed, so 60 cc of concentrated urine was collected by catheter six hours after admission (electrolyte content of urine: sodium 160 mEq./L., potassium 35 mEq./L., chlorides 180 mEq./L.). After administration of chloride, it was possible to collect urine on a few more occasions, the total for the first 24 hours being 160 ml. During the next 24 hours the urine volume was very scanty, and there was complete anuria for long periods. Cystoscopy revealed irritation around the ureteral orifices. Ureteral catheterization could not be performed. The patient's motor activity was regarded as being mainly the sequel of cerebral excitation. In retrospect, it is considered that it was also the result of forced employment of the auxiliary muscles of respiration. An attempt was made to control the excitement with largactil, following which the patient became quieter, but at the same time the respiration was further weakened, and after a few hours the patient became completely flaccid, with apnea. Artificial respiration had to be given immediately, at first by intubation and then via tracheotomy. Attempts were made during the course of the next few days to return to spontaneous respiration, but these did not succeed. A period of three weeks elapsed before the artificial ventilation could be tapered off, and the tracheotomy was closed one week later. The patient's condition showed marked improvement as a result of the artificial ventilation. The pallid-cyanotic color became more normal, the paralytic ileus terminated spontaneously, and diuresis was reestablished. Ileus and oliguria recurred every

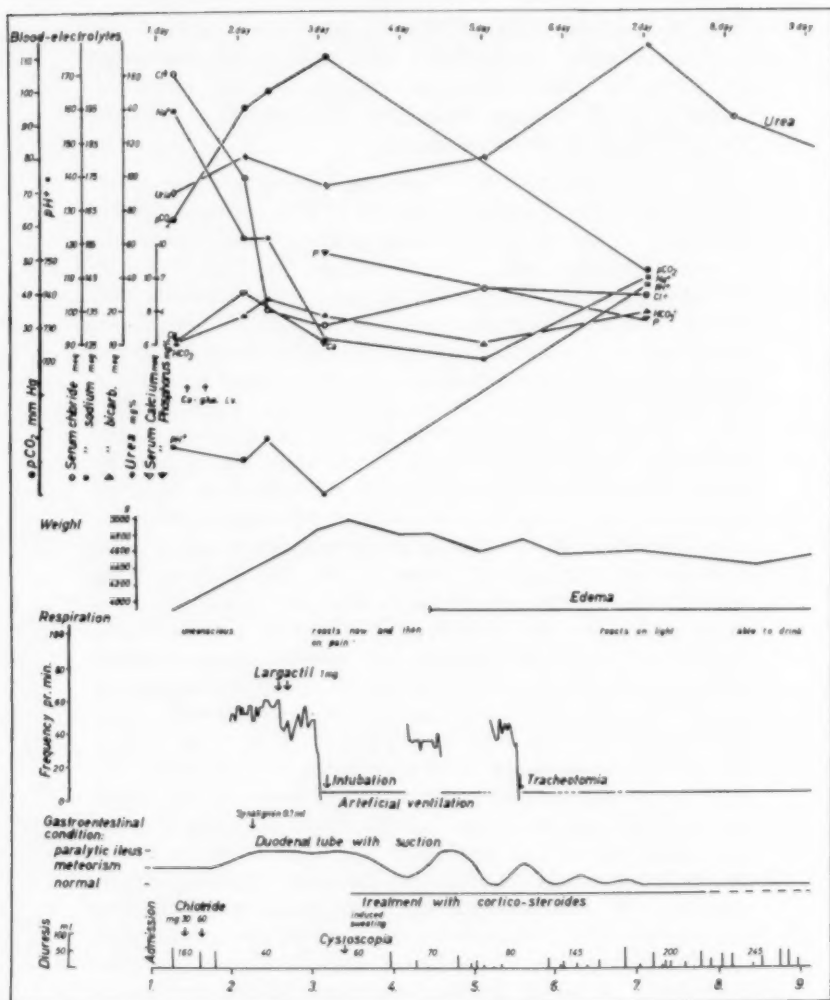


FIG. 1. Excessive acidosis with perenal anuria, paralytic ileus and respiratory paralysis, following salt poisoning—cured after prolonged artificial ventilation.

time an attempt was made during the following days to terminate the artificial ventilation, disappearing once again as soon as the patient received effective ventilation.

With respect to the serum electrolytes, there was a pronounced fall in the sodium and chlorides as early as the second day, and there was a transient rise in bicarbonate. On the third day the sodium and chloride fell to subnormal values. Only the pH and $p\text{CO}_2$ -determination, which showed falling pH and rising $p\text{CO}_2$, revealed how far the patient was from normal. Calculation showed that the apparently more normal sodium and chloride values were the result solely of a dilution produced by the fluid retention, which could be noted from simultaneous weight increase. Manifest edema did not appear until the fourth hospital day.

Further course: The patient showed fairly constant improvement from the sixth day, apart from transient complications of the respiratory tract, the result of atelectasis and pneumonia.

The blood electrolytes, pH and $p\text{CO}_2$ were normal on the seventh day. Blood urea was still increasing, but fell thereafter—apart from a secondary rise to 120 mg per 100 ml when the artificial ventilation was tapered off—to become normal by the end of the third week. Urine secretion was satisfactory apart from the short intervals mentioned above, the edema disappeared in about one week, and the urine became albumin-free in one month. Urography nine months later showed good concentration, with normal urograms, slender ureters and normal bladder shadow. Intestinal function was rapidly re-established. The sensorium slowly returned to normal. Around the third to fourth day, the patient reacted to painful stimuli, on the seventh day to light stimuli, and on the eighth day she could drink from a bottle. From the end of the second week, it was possible to distinguish between sleeping and waking periods, and thereafter the patient became quite normal.

During the second week she occasionally showed unilateral change of color and occasional attacks with brief general tremor, but she was discharged as cured $2\frac{1}{2}$ months after admission to hospital. In the course of the following six months she had 5-6 brief attacks of cyanosis, accompanied by transient apnoea or superficial rapid respiration, but since then there have been no attacks of any kind. EEG records taken after 3, 4 and 9 months have shown nothing definitely abnormal, although in the last two examinations there was damping over the right hemisphere and the left frontal region respectively.

The patient is still completely well eighteen months after the illness. She had remained a few centimeters smaller than average for her age, but her psychomotor development may be regarded as normal.

TREATMENT

In addition to the treatment described in the case report, the following may be mentioned as being of importance. During the first few days, daily infusions of 20-30 ml blood were given, together with 5 per cent glucose solution i. v., 500-600 ml per 24 hours for the first two days, thereafter adjusted to diuresis on account of increase in weight and oliguria-anuria. Nourishment by mouth was given from the eighth day. Corticosteroids were given for four to five days, intensive antibiotic treatment was initiated, and symptomatic treatment as indicated.

DIAGNOSIS

On admission, the clinical picture resembled those of encephalitis or of salicylate poisoning. As soon as the results of the serum and urine analyses were available, the diagnosis of salt poisoning was considered overwhelmingly probable. At first, the parents rejected this diagnosis as being impossible, but they later confirmed it when it was found that the glass container used for sugar had instead been filled with salt, prior to preparing the feed formula after which the infant's symptoms suddenly started. A checking of the weight of the salt in this jar with the measuring spoon which had been used for preparing the mixture, showed that the infant had been given an approximately 8 per cent salt-milk mixture, so that it may be estimated that the infant retained 4-6 g salt, or 70-100 mEq., which corresponds fairly well to the electrolyte values measured.

EPICRISIS

Following ingestion of 4-6 gm sodium chloride with scanty fluid, a 3-month old infant, previously well, develops an excessive acidosis—pH 6.94-6.80, hypernatremia (serum sodium 194 mEq./L), hyperchloremia (serum chloride 170 mEq./L) and hypocalcemia (serum calcium 6 mg per 100 ml). The clinical picture was characterized by cerebral excitation with violent excitability and general convulsions, these being partly tetanic, followed by depression and unconsciousness with widespread paralysis, violent hyperpnea, which became total apnea, paralytic ileus and oliguria-anuria. The signs disappeared after three weeks of artificial ventilation and, initially, careful administration of electrolyte-free

fluids parenterally. A correlation was observed between the effectiveness of the ventilation and renal-intestinal function, as the anuria and paralytic ileus recurred several times, whenever the ventilation became less effective. The infant was discharged from the hospital three months after admission. During the next six months there were signs of occasional cerebral attacks, but in the last year the infant has been completely well and is now developing normally. It has been impossible to demonstrate any disease or malformation, especially of the urinary tract, which might explain the serious sequelae of the salt ingestion.

DISCUSSION

The patient's salt poisoning developed following ingestion of 50-75 ml of 8 per cent salt-milk mixture, corresponding to 4-6 gm of salt—a good 1 gm per Kg body weight, or 18-25 mEq. per Kg body weight. The milk mixture contained approximately 2700 mosm. sodium chloride per litre, apart from the electrolytes normally present in milk.

In addition, the infant had no opportunity of drinking electrolyte-free fluid, and had a considerable extra unmeasurable fluid loss by evaporation as a result of fever, restlessness and hyperpnea.

The kidney in infants not only has difficulty in excreting large quantities of electrolytes (Dean & McCance, 1949², and Reznikowa, 1951⁹), but reacts to restricted fluid supplies in a manner unlike that of the adult kidney: not merely by increased resorption in the distal tubule, but also by reducing the renal blood flow and glomerular filtration. (Skinner & Moll, 1956¹¹).

The fact that the patient was premature may signify that kidney function was particularly immature at the time of the intoxication, even though renal disease or reduced renal function could not be demonstrated later. Finberg found a preponderance of prematures among cases with hypernatremic dehydration, mainly arising after diarrhoea. Furthermore, the amount of salt administered was greater than the amount quoted by Skinner & Moll, in agreement with others, as being the maximum daily excretion for healthy infants, namely 5-10 mEq. /Kg/ 24 hours. Their cases of hypertonic dehydration from diarrhoea arose after an intake of respectively 3.5, 9, 19, 19 and 22 mEq. /Kg/ 24 hours. Schmith (1955)¹² reports that 2 gm of salt per Kg in 20 per cent solution is a fatal dose for piglets, and that poisoning results from ingestion of a 2 per cent salt solution with otherwise limited fluid intake. Finally,

if the osmotic concentration of the salt solution is compared with the fact that even an adult kidney cannot excrete a urine with more than 1400 mosm. per litre, the disease picture presented by this patient appears to be reasonably explained by this modest salt intake and reduced fluid intake. It only remains to express surprise at the apparent rarity of such accidents.

The symptoms in hypernatremia are partly cerebral—irritability and depression; changes in consciousness, from moderate lethargy to coma, universal irritability, elevated muscle tone, increased or absent deep reflexes, muscular irritability and general convulsions. Elevated cerebrospinal protein without pleocytosis is reported to be a characteristic feature. Intracranial hemorrhages are not unusual. Electroencephalographic changes are usual in the acute stage, but disappear if there is a cure without permanent lesion (neurological residue). Finberg et al.⁵ (1957) have sought an experimental explanation of the reason why cerebral symptoms are so pronounced in hypernatremic dehydration. They demonstrated increased intracellular sodium in the muscle cells, but not in the brain cells, and consider that osmotic equilibrium is achieved between the brain cells and the surrounding extracellular fluid by the breakdown of intracellular complexes, an occurrence associated with gross disturbances in cell function. Against this background, it is easily understood that rehydration must be carried out slowly, so that the intracellular milieu can once more become adjusted to normal conditions. A considerable loss of weight is also characteristic, without the patient having a correspondingly dehydrated appearance, turgor is not reduced and the eyes do not appear so sunken. In the fatal cases, death did not result from circulatory collapse as in hypotonic dehydration, but from respiratory failure (Elkinton,³ 1957). Two of Skinner & Moll's patients developed apnea, the one died, and the other was saved by artificial respiration for nine hours. Hyperventilation is likewise a common symptom. The renal symptoms and their mechanism have been touched on in part in the foregoing. On the other hand, paralytic ileus is not usually described as a complication. The relation between the effectivity of ventilation and renal-intestinal function, as described in the case report and illustrated in fig. 1, is remarkable. When the artificial ventilation was finally tapered off (not shown in fig. 1), the renal function was also slightly reduced, as manifested by a transient rise in blood urea. A simultaneous fall in urine volume was not observed, but at that stage the urine was not being collected quantitatively.

Apart from the serum sodium, the extracellular cations behave in a variety of ways. The serum potassium is often reduced. In the present patient, it was normal during the first few days, but after the sixth day, when diuresis was re-established, it fell temporarily to 2.5 mEq./L. (Potassium has not been included in fig. 1). Serum calcium is generally reduced, without any explanation for this. Finberg (1955) found no inverse correlation, either between serum calcium and serum sodium, or between serum calcium and serum phosphorus.

Regardless of etiology, low serum carbonate is usually found in hypertonic dehydration, but not always, although it appears always to be low when the etiology involves increased salt ingestion. In the series reported, arterial pH has not been mentioned, but with regard to the patient previously reported, who was cured after artificial ventilation, Skinner & Moll state that a very low figure of serum pH was presumably the result of a technical error. Schonheyder¹⁰ reports that pH values under 7 are incompatible with life; values of 6.80-6.90, in at least 48 hours, as recorded in the present patient, are excessively low and are seldom previously seen in children who have survived. The prognosis in hypertonic dehydration is generally good if the patient survives the initial stage. However, in a minority of cases, there is permanent cerebral damage.

With regard to treatment it is possible that the parenteral administration of glucose solution contributed to an aggravation of the further course, in spite of the caution shown in the dosage. Most investigators report that infusion of electrolyte-free fluids may aggravate the convulsions. This appears to have been the case in the present patient. Even though serum sodium still remains elevated, the administration of hypotonic saline to reestablish the original sodium concentration should lead to a termination of the convulsions. (Weil & Wallace).

Reports vary as to the amount of fluid and electrolytes which should be administered. Skinner & Moll advise 50-75 ml/kg per 24 hours as a replacement for insensible loss (+ cover for loss in urine and stools) + 10-20 ml/kg/24 hrs. for rehydration. Sodium should be withheld so long as there is oliguria (as it was in this patient). When renal function is re-established, 2-3 mEq./kg/24 hrs. is advised for the kidney function (renal adjustment) + 2-7 mEq./kg/24 hrs., if there is salt loss, less if the patient is "hypernatremic", which here must be taken to signify an absolute salt

excess in the patient. Finberg advises 200 ml/kg/24 hrs. with 15-40 mEq. sodium per L., and Weil & Wallace propose 180 mg/kg/24 hrs. with 50-65 mEq. sodium per L. and 35-45 mEq. chlorine per L. (The remainder of the anions should be lactate or bicarbonate).

Although these patients lose a considerable amount of potassium, this should not be administered before diuresis is in order—possibly not until it can be given orally.

Furthermore, symptomatic treatment should be given: oxygen, calcium gluconate, possibly anti-convulsants and sedatives. Drugs with slight effect on the respiration such as largatil are preferred. Antibiotics should also be given.

In cases of severe poisoning, exchange transfusion also seems worth considering.

SUMMARY

A case is reported of acute alimentary poisoning with salt following the ingestion of 4-6 gm of salt. The patient developed pronounced hypertonic dehydration with severe acidosis ($\text{pH}=6.80$). The disease picture was complicated by paralytic ileus, anuria and respiratory paralysis, but the patient recovered after artificial ventilation for three weeks. The symptomatology and pathophysiology are reviewed. The course of the disease demonstrates a clear correlation between the effectivity of the ventilation and renal-intestinal function. The question is considered whether the symptoms would have been milder if rehydration had been commenced with hypotonic instead of electrolyte-free fluid. Exchange transfusion is suggested in similar cases of serious poisoning.

REFERENCES

1. Boyer, C. I. & J. A. Brown: Salt toxicity for turkeys, Rept. N. Y. State Vet. Coll. Cornell Univ. 34:1954-55, (Publ. 1956). Ref. C. A. 13300 c., 1956.
2. Dean, R. F. A. & R. A. McCance: The renal response of infants and adults to the administration of hypertonic solutions of sodium chloride and urea. *J. Physiol.*, 109:81, 1949.
3. Elington, J. R.: The relationship of water and salt. *Proc. Nutr. Soc.*, 16:113, 1957.
4. Finberg, L. & Harrison, H. E.: Hyponatremia in infants. *Pediatrics*, 16:1, 1955.
5. Finberg, L., C. Luttrell & H. Redd: Functional, anatomical and biochemical alteration of the brain resulting from experimental hyponatremic dehydration. *A.M.A.J. Dis. Child.*, 94:542, 1957.
6. Heinz & Haas: Über Kochsalzvergiftung. *Münch. Med. Wchnschr.*, 70:565, 1923.
7. Kvalvik, K.: Et tilfælde af koksaltintoksikasjon (a case of salt intoxication). *Tidsskr. f. d. Norske Lægeforening*, 77:839, 1957.
8. McCance, R. A., C. C. Ungley, J. W. L. Croftall & E. M. Widdowson: The hazard to men in ships lost at sea, 1940-44. *Med. Res. Coun., Spec. Rep. Ser.*, No. 291, Pag. 34, London 1956.
9. Reznikova, L. O.: The influence of the administration of large amounts of water and salt on the functioning of the kidneys of young dogs. *Fiziol. Zhur.*, 37:217, 1951. Ref. C. A. 11130 b., 1955.
10. Schonheyder, F.: *Biokemi* (Textbook of Biochemistry), pg. 383, ed. 2, Aarhus 1953.
11. Skinner, A. L. & F. C. Moll: Hyponatremia accompanying infant diarrhea. *A. M. A. J. Dis. Child.*, 92:562, 1956.
12. Smith, D. L. T.: Salt poisoning in swine. *Proc. Am. Vet. Med. Assoc.*, 92:69, 1955.
13. Weil, W. B. & W. M. Wallace: Hypertonic dehydration in infancy. *Pediatrics*, 17:171, 1956.



Poison Control

HOW, WHERE, WHEN AND WHY DO ACCIDENTAL POISONINGS IN CHILDREN HAPPEN?

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OVER 10,000 preventable poisonings are reported to the New York City Poison Control Center annually. A sample of case histories is presented in order to acquaint the practicing physician and pediatricians, with the modes of occurrence of accidental poisonings and the potential role of the practicing physician in helping to prevent such poisonings. The variety of substances involved may be illustrated by mentioning a few of the causative agents reported in a single recent week-end. This is only a fragmentary list since it does not include minor events and incidents on which complete information is unavailable.

<i>Product Accidentally Ingested</i>	<i>Age</i>	<i>Sex</i>
Viburnum	6 yrs.	F.
Feen-a-mint (4)	4 yrs.	F.
Clorox	60 yrs.	F.
Lysol (3 tsps.)	3 yrs.	M.
Raid	Adult	F.
Heroin	24 yrs.	F.
Yew Berries	2 yrs.	F.
Barbiturates	31 yrs.	F.
Alcohol	20 yrs.	F.
Barbiturate	41 yrs.	M.
Indelible Pencil	3 yrs.	M.
Coriciden Medilites	2 yrs.	M.
Nytol	41 yrs.	M.
Wilberts No Rub Furniture Polish	21 mos.	Unk.

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Johnson's Baby Shampoo	2 yrs.	M.
Rosex Bluing	2 yrs.	M.
Antihistamine-Pyrimamine	2½ yrs.	M.
Javelle Water	18 mos.	M.
Hercules Pipe Joint Compound	2 yrs.	M.
Saniflush	3 yrs.	M.
Peritrate Tabs 10 mg. (5)	3 yrs.	F.
Marsilid/Doriden and or Stelazine	31 yrs.	F.
Overdose Unknown	43 yrs.	F.
Menadione	Unk.	Unk.
Paint Thinner (Benzine?)	1½ yrs.	F.
Metallic taste to tomato juice	4 yrs. & 3 yrs.	M.
Methyl Salicylate	4 yrs.	M.
Windex	20 mos.	F.
Pyrimamine Malcate	2½ yrs.	Female
Doriden	30 yrs.	F.
Mercury thermometer	13 yrs.	M.
Regimen tablets	12 yrs.	F.
36 Ex-Lax	2 yrs.	Unk.
Red coloring powder	1½ yrs.	Unk.
Red tintex dye	18 mos.	F.
Paradichlorobenzene	30 yrs.	M.
Saccharin	4 yrs.	F.
½ tube testors plastic cement	2 yrs.	F.
Charcoal lighter fluid	2 yrs.	M.
Warfarin	Unk.	Unk.
Aspirin	20 yrs.	F.
Rectal desitin ointment	13 mos.	F.
Moth Ball?	2 yrs.	F.
Rosex Bleach	3½ yrs.	M.
Clorox	26 yrs.	F.

TAKING CHANCES "JUST FOR A MINUTE"

Toxic Agent: J-O Paste *Age:* 10 Months

Mother relates that she removed the top of the jar of J-O Paste in the kitchen and put it *on the window sill*. The nurse who makes the home visit reports as follows: "Mrs.—— said she took the top off the jar of paste in the kitchen, laid it on the window sill, *turned* to put the jar on a cabinet shelf out of child's way, while she prepared to spread it on something. Just that quick, patient passed his fingers over the top of the jar and put it in his mouth." Happily, no ill effects developed.

Toxic Agent: Mol-Iron Tablets *Age:* 2 Years

Mother always kept the medication "*on the cabinet in the kitchen*". She left the kitchen *for a moment to answer the telephone*. When she returned, she noticed that the child had the bottle containing the Mol-Iron Tablets in her hand and she believed that the child had ingested about five tablets. This child vomited, developed diarrhea, and was taken to the hospital, but after emergency treatment recovered completely.

UNEXPECTEDNESS OF THE CHILD'S BEHAVIOR BECAUSE OF HIS
ATTAINING NEW CAPACITIES AS HE GROWS AND DEVELOPS

Toxic Agent: Dri-Glo Floor Polish *Age:* 15 months

While infant was *crawling* on the floor in the living room, he picked up a bottle of Dri-Glo *from the floor* and ingested some of its contents. Patient had burning of the mouth and throat and vomited. He was rushed to a hospital where the stomach was lavaged and infant was treated with antibiotics and supportive therapy. After four days of hospitalization, patient recovered completely.

Toxic Agent: Sandostene (antihistamine) *Age:* 16 months

Mother was working in the bathroom and left a three-year-old girl and the patient (16 months) in the living room. The three-year-old *climbed* up on the chair, reached up to the shelf where the medication was stored and took the Sandostene out of the bottle and *gave five tablets to the younger sibling*. The infant became dizzy and had to be rushed to the hospital for treatment.

Toxic Agent: Iron Pills and Listerine *Age:* 2 Years

Mother left the apartment *for about five minutes* to use the telephone on the ground floor. The three-year-old brother *climbed* on the table with the aid of a chair which enabled him to reach a six foot high wardrobe closet where a Listerine bottle and pill box were kept. He *gave both to the two-year-old patient*, who drank half of a small bottle of Listerine and also ingested some of the pills. The infant began to vomit and soon developed convulsions. An ambulance was called and the child was taken to the hospital, where he remained for one week.

OLDER SIBLINGS FEEDING SUBSTANCES TO THE YOUNGER CHILD

Toxic Agent: Drano *Age:* 1 Year

A three-year-old brother took Drano out of a *cupboard in the kitchen*, while mother was hanging clothes. The *one-year-old* infant obtained the Drano and ingested an unknown quantity. Mother noticed blood on lips when child cried out in pain. Child appeared in acute distress and was immediately taken to a hospital where his stomach was lavaged with vinegar. After nine days of hospitalization, patient made a complete recovery.

Toxic Agent: Reducing Pills (Brand unknown) *Age:* 21 mos.

Mother kept her reducing pills *in a dresser drawer*. The older child (a three-year-old) got into the drawer, removed the pill

box and gave some to the younger child. The children were playing in the bathroom, unsupervised, while the mother was working in the kitchen. The mother was totally unaware of what had happened until the child became ill. The presenting symptoms were: crying, nausea, vomiting, and a rash on the face. Patient was taken to the hospital about four hours following ingestion where emergency care was administered.

Toxic Agent: Pinworm Remover *Age:* 2 Years

While mother was working, a fourteen-year-old baby sitter was watching the children. An older sibling, seven years old, removed the medication from the medicine cabinet and gave the bottle to the two-year-old to play with. The patient ingested about 20 tablets and soon began to vomit. When the mother returned from work, about four hours following the ingestion, the baby sitter told the mother what had happened and the child was immediately rushed to a hospital emergency room for treatment.

Toxic Agent: Phenobarbital and Dexedrine *Ages:* 5 and 6 yrs.

A five-year-old child found a bottle of pills in a garbage can near his home. He distributed the pills to several children, ranging in age from three to seven years old, as candy. Most of the children ingested from three to six pills each, all believing it was candy. A neighbor noticed this episode and notified the police. The children were rushed to the hospital for emergency treatment and the medication was identified as phenobarbital and Dexedrine.

This episode illustrates the need for safe disposal of medications or household products. Drugs and medicinal preparations should not be discarded in garbage cans and other places where they may be retrieved and ingested by children. (This includes samples distributed to physicians.)

Toxic Agent: Barbiturate *Ages:* 2 and 3 Years

"Whodunnit?"—Mother was pregnant and was taking phenobarbital as a sedative. While she was lying down resting, the children removed the medication from the shelf of the closet in the kitchen where the medication was stored. Each child accused the other of eating some of the contents. Although there were no symptoms manifested, both children were taken by the father to a hospital where their stomachs were lavaged.

This case is cited to illustrate the ready accessibility of potent drugs and the fact which had been noted previously, that when

one sibling accuses the other of ingesting the medication, he too is most likely to be involved.

Toxic Agent: Rat Poison *Age:* 14 Months

Mother placed some bread with J-O Paste on it in the following places: "... under the crib, stove, record machine in the front room, and in front of a rat hole in the kitchen. She forgot, however, to remove the substance from under the crib. Two older children took the bread from under the crib and gave it to the patient, who ingested some of it". Happily, the mother saw what was happening and was able to remove the bread containing the J-O paste from the patient.

EVENTS DEPARTING FROM THE USUAL HOUSEHOLD ROUTINE

Toxic Agent: Lye *Age:* 5 Years

While visiting a neighbor's house, this child obtained a beer can which was placed on the floor and contained lye, which had been used for cleaning purposes. The child ingested about a mouthful of the lye out of the beer can. She experienced burning of the mouth and throat, vomiting, and a choking sensation. This child had to be hospitalized for several months for treatment of an esophageal stricture and finally a gastrostomy had to be performed. With the availability of safer and more effective detergent materials, one questions the use of lye as a household chemical and particularly the removal of such substances from their original containers and their placement at low levels where they can easily be obtained by young children.

Toxic Agent: Papavatraol *Age:* 2 Years

Grandmother was visiting the family. She took her pills out of her purse and put them on a kitchen shelf. While the mother left the room, the child obtained grandmother's pills and ingested an unknown quantity. Though asymptomatic, she was taken to a hospital emergency room where the stomach was lavaged.

LEFT-OVER MEDICINES

Toxic Agent: Iron Sulphate *Age:* 2 Years

This medication was the remainder of a supply which had been prescribed for the mother during a pregnancy. It was kept in a bureau drawer in the bedroom. The children obtained the medication from the bureau drawer and ingested an unknown quantity. The mother was asleep at the time of this episode. The patients soon began to vomit and also developed convulsions. When the children vomited the mother awakened and discovered

the medicine container, which was almost empty. The children were immediately rushed to a hospital emergency room. On admission to the hospital the patients had nausea, vomiting, abdominal pains and convulsions. The stomach was lavaged within fifteen minutes following admission to the hospital and about one and one-half hours following ingestion. The mother estimated that the children swallowed about ten of these iron sulphate tablets each.

Since the inception of the Poison Control Center, there have been an unusually large number of incidents of iron poisonings due to iron medications which were originally intended for mothers who were under prenatal care. These preparations are usually considered "vitamins" and hence very safe, and the hidden iron poisoning hazard is not usually thought of and is entirely obscured. It would appear that the physician prescribing iron preparations, either for prenatal care or for anemia, should adequately warn the patient about the lurking hazard associated with the accidental ingestion of iron preparations, particularly by young children, and about the need for safe storage and handling of such medications.

MEDICINES IN THE POCKETBOOK (ESPECIALLY GRANDMA)

Toxic Agent: Tranquillizer *Age:* 3 Years

The following history was obtained by the public health nurse who visited the home following the accident. "The child's grandmother emptied her pocketbook on the bed in order to find an article in it; then she left the room to use the article (a key), with a lapse of about one-half hour. Later, she replaced things in her bag, unmindful of the empty vial (seven pills had been in it). This was not discovered until the next day, about 4:00 p.m. He had slept more than usual." Apparently the patient obtained the medication and ingested it. The child had abdominal pains and developed convulsions. He was immediately rushed to the hospital, where his stomach was lavaged and the child was observed for 24 hours.

Toxic Agent: Pyribenzamine and Bonamine *Age:* 2 Years

Mother left her pocketbook on a table in the living room. In the pocketbook were Pyribenzamine and Bonamine, which had been prescribed for the mother. The child opened the pocketbook, removed the medication and ingested an unknown amount in the belief that it was candy. Mother immediately induced vomiting and the child fortunately suffered no ill effects.

Toxic Agent: Phenylpropanolamine *Age:* 3 Years

Mother kept the reducing pills in her pocketbook and left the pocketbook in the kitchen on the kitchen table. The child obtained the pocketbook, opened it and removed the pills and ingested several, believing it to be candy.

PUTTING POISONOUS SUBSTANCES INTO DRINKING GLASSES OR
OTHER UNLABELED FOOD CONTAINERS

Toxic Agent: Benzine *Ages:* 4 Years, and 19 Months

Mother of the patients borrowed some benzine from a neighbor. The benzine, however, was in a *Pepsi-Cola* bottle. After removing a stain from a garment, the bottle was placed under the sink. The patients were playing in the kitchen. The older child obtained the bottle containing the benzine, drank some of its contents and also gave it to her playmate. They both experienced burning of the mouth and throat and vomited. Both children were taken to a hospital for observation and treatment.

Toxic Agent: Isopropyl Alcohol *Age:* 5 Years

The child had been ill and was given a medication that was colorless. It was kept in the medicine cabinet. Unknown to the child's father, the grandfather had a small medicine bottle of similar size, color and label (*not labeled alcohol*) into which he had poured rubbing alcohol for his own use. The father of the patient took the wrong bottle and gave the child one teaspoon. Fortunately, the child did not like the taste and did not swallow much of the alcohol. No untoward symptoms developed.

Toxic Agent: Brake Fluid *Age:* 2½ Years

Brake fluid was kept in a soda bottle and was put in the glove compartment of the family car. The glove compartment remained unlocked. The father left four children in the car in order to have a set of car keys made. When the father returned the oldest sister inquired—"What was in the bottle?", and promptly informed the father that the patient had drunk some of its contents.

Numerous poisonings were reported to the Poison Control Center resulting from medications, such as barbiturates and antihistamines, obtained from glove compartments in cars. The practice of keeping medications in unlocked glove compartments is to be deplored. Physicians should alert parents to the hazard in such a practice.

Toxic Agent: Furniture Polish *Age:* 4 Years

The patient's mother mixed furniture polishes and put the solution in a drinking glass on a kitchen cabinet. She left the room "for a moment" and Robert, who was playing in another room, came into the kitchen to ask for a drink. Seeing the mixture in the glass, he drank some of its contents believing it was Kool-Aide. It is believed that he drank two ounces of the solution. He experienced burning in the mouth and throat and cried out and was taken to the hospital where he remained for two days. The public health nurse relates that according to the mother this child was very active, curious and mischievous, and that she now recognizes the carelessness of her placing hazardous substances within this child's reach.

SPECIAL HAZARDS OF DROP-DOSAGE OR OTHER CONCENTRATED
MEDICATION

Toxic Agent: Tyzine *Age:* 9 Months

The preparation was purchased by the father, to be used as a nasal spray for himself and his six-year-old daughter. The infant had a running nose and the six-year-old daughter sprayed the baby's nose with Tyzine but did not tell the parents about it. The parents were entirely unaware of the accident until the patient fell asleep about one and a half hours following the administration of the medication. She could not be awakened until three hours later. Upon questioning, the six-year-old sibling finally admitted spraying the infant's nose. On admission to the hospital, the child was stuporous, with cold and clammy skin, dyspneic, cyanotic and perspiring freely. After three days of hospitalization and appropriate therapy, the patient recovered.

Toxic Agent: Tyzine *Age:* 2 Years

According to the public health nurse who visited the home, the bottle of nose drops had been placed on the coffee table while the mother laid the sibling infant in the carriage next to the table. The patient grabbed the bottle and drank the contents. The patient became stuporous and was taken to the hospital emergency room for treatment.

Toxic Agent: Pilocarpine *Age:* 2 Years

This medication was on a television set. The two-year-old patient obtained the bottle containing the medication and ingested a small amount of its contents. He immediately vomited and became stuporous. He was taken to the hospital where he had to remain for three days.

Toxic Agent: Privine Age: 14 Months

Mother left the medication *on an end table* in the living room. She went into the bathroom to wash the dropper which fits into the top of the bottle. *While she was out of the room the infant pulled up to the side of the table, obtained the bottle with the medication and drank some of the contents.* He became drowsy and had to be taken to a hospital for treatment.

Toxic Agent: Tyzine Age: 11 Months

Mother gave the child *a bottle of nose drops to play with, thinking that he would be unable to open it.* The child, however, was able to suck some of the contents into his mouth from the rubber bulb of the dropper which extends through the bottle. The patient became restless, cried, was drowsy and the eyes were crossed. The mother immediately called the family physician, who advised her "not to worry". As the patient's condition became worse the drowsiness, restlessness and cold and clammy skin, the mother called the doctor again about an hour following ingestion. He advised her to take the child to the hospital emergency room. After admission to the hospital, two hours following ingestion, the patient still appeared drowsy, restless, pale, and the eyes appeared cross. The skin was cold and clammy. The stomach was lavaged with warm saline and after several hours of observation in the emergency room the patient improved and was sent home.

NON-SAFETY OF SUBSTANCES SOLD OVER THE DRUG STORE OR
GROCERY COUNTER

Toxic Agent: Oil of Wintergreen Age: 2½ Years

The family, including the patient, were *visiting relatives.* A bottle of Oil of Wintergreen was *on a dresser.* The patient obtained the bottle and ingested a small amount of its contents. The family did not realize that the substance is hazardous *since it is sold without a prescription over the counter.* The child had to be hospitalized for indicated treatment.

"IT HAPPENS IN THE BEST OF FAMILIES"

Toxic Agent: Amphetamine Age: 3 Years

The *parent is a practicing physician* who used this medication for the treatment of an older sibling who is obese. The older child left the medication *on a kitchen shelf.* While the mother was out of the room, the patient *climbed* on a chair, obtained the bottle and ingested eight tablets. He became extremely hyperactive and had to be hospitalized for three days.

Toxic Agent: Selsun *Age:* 15 Months

A physician obtained some samples of Selsun sulfide. After using it as a dandruff remover, the remainder was left *on the edge of the bathtub*. His fifteen-month-old child obtained the preparation and ingested some of its contents. Happily, the ingestion did not produce any symptoms. The father, who is a pediatrician, administered milk as a first aid measure and the child recovered completely.

Toxic Agent: Esso Flit (5% DDT) *Age:* 1½ Years

This patient obtained the medication, which was placed, according to the mother, *in a linen closet and presumably well hidden*. The patient ingested an unknown amount of the preparation. The father, who is a physician, immediately contacted the Poison Control Center for advice with regard to therapy. Gastric lavage was advised and the father lavaged the child immediately.

Toxic Agent: Paradichlorbenzene *Age:* 3 Years

This episode also occurred in a physician's home. The physician serves as a member of the staff of a large hospital in the city. The child obtained the moth crystals and ingested an unknown quantity. The crystals happened to be *in an unmarked container* which came with a blanket which had recently been purchased from a large mail-order firm. The mother called the physician at the hospital immediately after the occurrence to inform him that the child had ingested the moth crystals. The aid of the Poison Control Center was enlisted by the father. The crystals were soon identified as paradichlorbenzene, which fortunately does not have sequelae of note.

As a result of this incident, however, the manufacturer agreed to have the crystal container properly labeled and identified with the names of the active ingredients.

Toxic Agent: "Miss Clairol" (Hair Coloring Preparation)
Age: 2 Years

This is the child of a school teacher. The Castoria and a bottle of "Miss Clairol" were placed *in the medicine cabinet, next to each other*. The mother failed to read the label and by mistake picked up the wrong bottle and administered to the child one teaspoon of "Miss Clairol". Happily, the child spat out most of it. The mother also administered milk to the child as an emetic and the patient vomited. She was taken to the hospital where the stomach was lavaged and complete recovery ensued.

Accidental poisonings are also frequently reported in homes of laboratory technicians, pharmaceutical detail men and pharmacists due to the ready availability of drugs and medications.

CONCLUSIONS

A review of the above cases reveals that they were all preventable if elementary precautionary measures had been employed. As a matter of fact, all chemical poisonings thus far reported to the New York City Poison Control Center (over 42,000) have been classified as preventable. Parents still lack a proper awareness of the potential hazards of medications and household preparations.

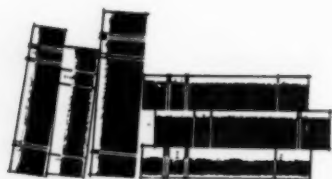
The case reports cited herein also highlight the fact that chemical poisonings happen with lightning rapidity. There is a close association between type of accident, accessibility and child's stage of growth and development. Removal of substances from their original containers, particularly to ordinary household utensils, is very hazardous. It is also dangerous to place substances of similar size, shape and color adjacent to each other. Failure to read the label before administering a medication may prove disastrous.

The most important weapon in the accidental chemical poisoning control program is "education". The final success of the program will depend in part on the degree of active involvement and participation of the individual pediatricians and general practitioners. The pediatrician must include accident prevention as an integral part of his daily work. Because of his knowledge of the stages of growth and development, he can give appropriate anticipatory guidance. The pediatrician is in a most enviable position to observe safety hazards in the home and to provide the necessary health education, guidance and safety information. He must appoint himself as a "Poison Control Officer" to the families he serves.

A strong plea is also made to practicing physicians to cooperate with local Health Departments when reporting is requested for accidental chemical poisonings, since only through careful scrutiny of the epidemiological data, particularly the details of the mode of occurrence, can effective preventive measures be developed.

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(This is the first of a series of papers by Dr. Jacobziner).



... Books

Edited by

MICHAEL A. BRESCIA, M.D.

YOUR CHILD'S CARE. 1001 Questions and Answers. By Harry R. Litchfield, M.D., A.A.C.P. and Leon H. Dembo, M.D. Cloth. Pp. 257. Doubleday & Co., Inc., Garden City, N. Y. 1960. \$3.95.

The authors in their volume, "Your Child's Care" have addressed themselves to the lay reader with the ostensible purpose of being as they state on the flyleaf "a mother's guide to healthy and happy babies". They have covered a wide range of subjects which encompass practically any question an anxious mother might think of. The method of presenting a simple question followed by a forthright answer is a most practical approach. The book is quite informative without being pedantic. No attempt is made to usurp the role of the physician. Rather the book can be used to supplement and aid the pediatrician in communicating with the mothers.

The authors have some questions and answers regarding monolism and cerebral palsy. This reviewer wonders if it would not have been of value to have included some questions and answers regarding mental retardation in general and specifically some of the metabolic disorders such as phenylketonuria. These can be included in future editions.

The book is recommended to mothers and a cheaper paper back edition might very well give it widespread distribution. Some pediatricians might even give them as a gift to some of the more "question asking" mothers. M. A. B.

RECENT ADVANCES IN BIOLOGICAL PSYCHIATRY. Edited by Joseph Wortis, M.D. Grune & Stratton, New York, pp 407, 1960.

This book represents the proceedings of the fourteenth annual convention and scientific program of the society of biological psychiatry in Atlantic City, June 1959. It is a treatise of experimental and physiologic work in psychiatry. The proceedings comprise physicians in the fields of neurology, psychology, neurophysiology and neurochemistry. The textbook contains an excellent roundup of current animal and human research in this difficult yet challenging field by such authorities as Himwick, Marrazzi, Wikler, Grundfest and Wortis.

CORRECTION: On page 438 of the October issue, the last two paragraphs of a review of the book by Dr. Clemens E. Benda were misplaced from another review and should not have appeared.

For those physicians whose interest is less specialized, there are four papers analyzing the sex impulse. These papers were delivered at the Havelock Ellis symposium and collectively may be read as well informed and sophisticated probing of the elusive area in human personality and relationships. There is a marked effort to co-ordinate biologic factors; such as hormonal action and to integrate this mechanism and others into the framework of an overall concept of the sex impulse.

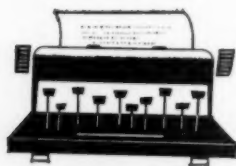
The clinical research entails considerable physiology and biochemistry in both animals and humans and certainly testifies to the great activity and ingenuity in pursuit of a firm link between mental health and illness and biologic factors. Recent advances in biological psychiatry is a comprehensive and valuable book for all psychiatrists and psychologists and for internists. Biological psychiatry is a pioneer field and one can express only gratitude for the evident devotion and patience of the pioneers in their perseverance and diligence in this field. J. M. COVELLI, M.D.

BLIND CHILDREN IN FAMILY AND COMMUNITY. By Marietta B. Spencer, photographs by Frank Agar, Jr. and Carol Safer. Cloth. Pp. 142. Price \$4.25. Minneapolis: University of Minnesota Press. 1960.

Blindness is not so common in young children that people generally know the special difficulties a child so handicapped encounters. Many medical practitioners and even pediatricians will admit to limited knowledge in this respect. Miss Spencer's book, richly pictorial with accompanying text, is most instructive to both lay and professional groups not specializing in the care of the blind. To the parents of a blind child it will afford guidance and encouragement not merely to accept the child's limitations but to understand his special problems and to foster utilization of the abilities he does have.

Vision is an important stimulus in the early years for both motor and social responsiveness. Lack of vision is therefore a handicap in these areas as well as in seeing. It is important that parents be aware of ways in which the child can be motivated to walk and run about with the security normal for the seeing child. While Miss Spencer emphasizes the similarities of the needs of the blind and seeing child she clearly shows the blind child's needs can be met in special ways. The book is of great value to parents and doctors alike. It can even serve as educational reading matter in the waiting room.

HELEN THOMPSON, PH.D.



Pediatrics Yesterday - and Tomorrow

Since I purchased, and took over the rehabilitation of this old journal, I have asked its long-time friends and contributors to make use of its editorial pages—to give their colleagues the benefit of their experiences and observations, or to send along biographical sketches of their medical careers, which might well find nostalgic interest among many ARCHIVES' readers.

One such, recently came from a friend of 40 years, Dr. Harry R. Litchfield. His comments and observations presented here, will likely bring memories of locales, people and events of the days he so colorfully reminisces about. Doctor Litchfield's letter follows. . . .

A.C.G.

Dear Mr. Gaylor:

It pleased me very much to know that Doubleday sent you a copy of Dr. Leon Dembo's and my recently-published book, "Your Child's Care", and that ARCHIVES OF PEDIATRICS will present a review of it in the "Books" pages.

This brought to mind that 39 years ago, ARCHIVES published my first paper, written in collaboration with Dr. Dembo, "Acute Abdominal Conditions in Children—Analysis of 200 cases", and that to date, the journal has presented about 22 of my papers—some in collaboration with other doctors.

And quite naturally, these thoughts took me back to the early days of my medical career, particularly my Resident days at the Children's Hospital, Washington, D. C., at a time when such great strides were being made in pediatric practice. Incidentally, the hospital's attending staff of those days numbered many pediatricians who later were singularly successful and well known—like Doctors John Foote, Joseph Wall, Donnelly, Copeland, etc.

Others who were assigned as assistants on the pediatric resident staff at Washington Children's Hospital, were Doctors Eddie Broocks, Johnny Reed and Richard Hewitt, and added to the resident staff four days after my arrival, was Dr. Leon Dembo, who, I am happy to say, became my lifelong friend and frequent collaborator.

But let me go back and record that as seems true of the careers of many pediatricians, my several years' experience in other fields gave me a broad "introductory" advantage to what became my specialty. I mean my fortunate appointment to that rather famous New York

City Hospital for contagious and infectious diseases, Willard Parker. My three years at that hospital, and another for contagious diseases in children—Queensboro—gave me ready acceptance as Resident Pediatrician at the Washington (D. C.) Children's Hospital.

The residency at Willard Parker, with its wealth of material, accorded me contact with men like Dr. W. H. Park, Director of the Laboratories, City of New York and Professor at Bellevue Medical School—originator of the intravenous diphtheria antitoxin . . . with Dr. Josephine



CHILDREN'S HOSPITAL—WASHINGTON, D. C.

RESIDENT STAFF—1921

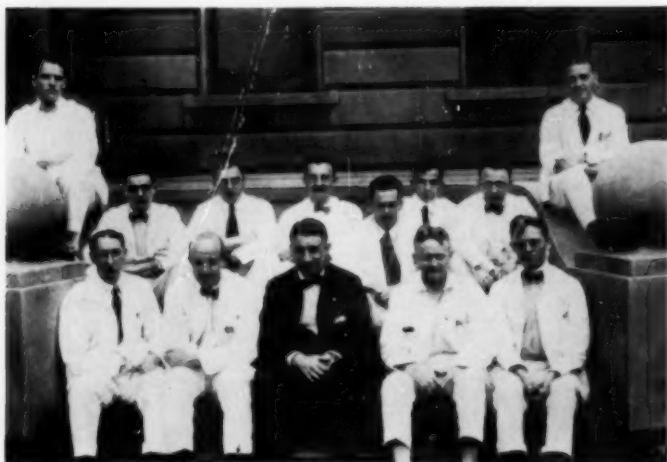
Dembo, Reed, Litchfield, Brooks, Hewitt

M. Neal, then considered an authority on meningitis and spinal fluids. . . Dr. Zingher, who was doing extensive testing with diphtheria toxin antitoxin inoculations in the New York Public Schools. All of this helped tremendously in my learning so much about preventive medicine.

Also at Willard Parker, I gained greatly challenging experience through examination and treatment of hundreds of cases of measles, pertussis, scarlet fever and diphtheria, poliomyelitis, typhoid, typhus fever and smallpox . . . all these; mortalities, complications and residuals aided in later practice, for of course, most of these diseases, as such, are now extinct.

Now to the pediatric "chapter" of Dr. Dembo's and my efforts. Inspired by articles from such prominent pediatricians as Dr. McKim Marriott, Alexis Hartman, John Howland, Dandy and other pioneers,

we approached Dr. John Foote, professor of pediatrics and Dean at Georgetown University, for advice. His guidance and that of Dr. Wall, assisted greatly in the acceptance of Dr. Dembo's and my papers in ARCHIVES OF PEDIATRICS, December, 1921; the JAMA, February and March 1922; and again in 1922, ARCHIVES OF PEDIATRICS. We believed that apart from the hard work every pediatrician puts into his practice, our research and writing contributions were something



WILLARD PARKER HOSPITAL

RESIDENT STAFF—1924

Hopkins, Peck, Litchfield, Peretz, Rosen, Lorenze, Seidman, Weller,
Thompson, Blauvelt, Supt. E. Giddings, Crawford, Lewison

of an influential factor in our being appointed instructors in pediatrics at the Georgetown and George Washington Medical Schools.

After rather demanding experiences in cases calling for treatment of Laryngeal Diphtheria with introduction of a method of suction bailed as an advance over the O'Dwyer method of intubation practiced at Willard Parker, you can imagine that I considered it a singular honor (as a Resident) to be allowed to present a paper—"Suction in Laryngeal Diphtheria" before an important audience which was made up of the Pediatric Section of the New York Academy of Medicine. (The AMA Journal published my paper in their February 1923 issue).

After many activities in the United States—contagious disease hospitals; Brooklyn Thoracic Hospital, etc., I went on to training in European Clinics, where with top-rank pediatricians, I expanded my experience in pathology, diseases of the nose and throat; x-ray; hematology and others....

NOVEMBER 1960

But with the many occupations during my European, Middle Eastern and other area practice, I still found time for gravitating to that all-important dissemination—or better, sharing—of information via the written word. Writing for the *Luty* continued to be of great interest to me; so Dr. John Foote's original inspiration kept coking back to Dr. Dembo and to me. And after various consultations with Dr. Dembo in Cleveland, our first book was published by Williams and Wilkins, Baltimore, and received a sell-out demand.

Shortly thereafter, we began to sense a need for an up-to-date volume on pediatrics for general practitioners and pediatricians. Finally, after five years and many revisions, this was published in four volumes known as "Therapeutics of Infancy and Childhood" (F. A. Davis & Company, 1947). There were 119 contributors including the famous pediatricians who held professorships in Medical Colleges throughout the country. These volumes went through three editions with a translation into Spanish and Portuguese.

After two years gathering material with Dr. Dembo, Grune & Stratton published our "Pediatric Manual for Mothers". In 1959 Doubleday asked us to give them the rights for a revised edition. This is the book "Your Child's Care" just published and which you are kindly reviewing.

Over the years, reprints of published articles by me and my associates have accumulated. Many hours had been spent in planning these works, collecting the data and finally writing the manuscripts! Now, in assembling this material, I am reminded of a Latin inscription which I noticed in the Schoenbrunn gardens, Vienna, which reads..... "Horas non numero, visi serenas"—"I only show the happy hours"... I hope to preserve these memories and those of my collaborators through this portfolio. My lifelong work with Leon H. Dembo has been a great pleasure to me and I doubt whether I could have accomplished much without him.

My association with ARCHIVES OF PEDIATRICS through the years has been one of interest and satisfaction, and I send best wishes for its continued progress.

Sincerely yours,

HARRY R. LITCHFIELD, MD

60 Plaza Street, Brooklyn 17, N. Y.

Steigman, A. J. and Lipton, M.M.: FATAL BULBOSPINAL PARALYTIC POLIOMYELITIS DUE TO ECHO 11 VIRUS. (Journal American Medical Association 174:178 Sept. 10, 1960)

A 2-year old child with fatal bulbospinal paralytic poliomyelitis was infected with an *ECHO 11* virus to which she developed antibody. At no time was poliovirus antibody detected in any of her serial blood serums. Awareness of the danger that nonpolio enteroviruses can cause poliomyelitic disease and fatalities is emerging. The frequency with which this may happen is as yet undetermined and merits continued close surveillance and concern in its own right and in evaluation of poliovaccine failures.

AUTHOR'S SUMMARY.

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